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**1982 VIRUS TOLERANCE RATINGS
FOR CORN STRAINS
Grown in the Lower Corn Belt**

In cooperation with
Missouri Agricultural Experiment Station
Ohio Agricultural Research and Development Center and
Ohio Cooperative Extension Service

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Preface

In continuing research to measure corn tolerance to natural virus infection by maize dwarf mosaic and maize chlorotic dwarf, breeders and researchers grew selected corn strains in test plots in lower parts of the Corn Belt. The results of these tests are given in this publication in two parts—corn strains grown in Missouri and those grown in Ohio.

Observers of the individual corn plants rated symptoms on a scale from 1 (no virus symptoms) to 9 (complete susceptibility). Infections varied in intensity between hybrids and inbreds. At all test locations, johnsongrass, an alternate host, was abundant near the plots. The rating variations within tests of inbreds and single cross and double cross hybrids are shown in tables in this publication.

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245 Virus Tolerance Ratings of Corn Strains Grown in Ohio in 1982¹ [L-4]

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This study identified corn (*Zea mays* L.) genotypes evaluated in 1982 that exhibit levels of tolerance to maize dwarf mosaic virus (MDMV) and maize chlorotic dwarf virus (MCDV). The results should be useful to growers for identifying hybrids with high enough tolerance levels for planting in areas of high virus incidence. In addition, the results should be useful in evaluating the responses of new or experimental genotypes that might be worthy of introduction into corn improvement programs.

We grew commercial corn hybrids at two locations in Missouri and noted MDMV and MCDV symptoms under conditions of natural infection. Test plots were located on the Bonacker Farm near House Springs, Jefferson County, and on the University of Missouri Delta Research Center and Extension Center, Portageville, Pemiscot County.

In 1982, materials for evaluation (inbreds, S lines, and mass-selected populations) were planted with a four-row planter, three replications in single row plots 6.1 m long with 28 kernels per row. Rows were spaced 91 cm apart.

The Portageville and House Springs plantings are usually planted late to encourage high levels of virus transmission from johnsongrass (*Sorghum halepense* (L.) Pers.), the alternate host. Johnsongrass is abundant and grows about 2 m high in and around the test plots at both locations. The Portageville plot was planted May 3 and House Springs May 20.

At the Rollins' Bottom nursery (University of Missouri) in Columbia, three replications of 10 selections were planted from the composite population, PR-Mo2, which had been random mated in Hawaii in 1981. Plants were inoculated with MDMV using an artist's air brush. Fifteen other selections from PR-Mo2 selected for 5 years for virus resistance were inoculated with MDMV. Twenty-five entries of Ibadan Composite B (Nigerian Composite B), the original source of PR-Mo2, and 8 of BS13 were also inoculated with MDMV and rated.

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Virus Incidence

Symptoms of both viruses were observed at Portageville and House Springs. MDMV produces a typical mosaic pattern, whereas MCDV produces vein clearing in infected leaves. Johnsongrass is the alternate host for both viruses. The corn leaf aphid (*Rhopalosiphum maidis* (Fitch)), the green bug (*Schizaphus graminum* (Rondani)), and several other aphids are vectors of MDMV; it can also be transmitted mechanically. The leafhopper (*Graminella nigrifrons* (Forbes)) is the vector of MCDV, which cannot be transmitted mechanically.

Each plant was rated for virus symptoms on a severity scale of 1 to 9 (1 = no symptoms, 9 = plant mortality). With the exception of the air-brush inoculated plots, the ratings were made mainly for severity and not for specific types of virus. Plot means that were used in further analyses were the averages of the individual plant ratings. The predominant virus at House Springs and Portageville was MDMV. MCDV usually appeared later than MDMV. The average virus rating in 1982 at House Springs for the tolerant single cross, Mo14W x Oh7B (15-year average = 2.94), was 1.46. This average rating was slightly lower than observed in 1981 (2.10). At Portageville, this single cross (13-year average = 2.00) had a rating of 2.83. At House Springs, the susceptible single cross Mo5 x H55 rated 6.06 (15-year average = 6.78), which was considerably higher than observed in 1981 (2.93). The same single cross at Portageville was rated 3.08 (13-year average = 5.59) (table 1).

V Commercial Hybrids

At Portageville, virus ratings were made for 27 commercial and 2 check hybrids (table 2). The lowest rating was 1.96 and the highest was 4.02. Twenty-four hybrids were rated less than 3.0, which was considered to be relatively tolerant. Most hybrids could not be differentiated statistically. No hybrid was significantly less than the mean of all entries, but the sweet-corn check had a lower rating than the mean of all entries.

At House Springs, the lowest rating was 1.32 and the highest was 3.74 (table 2). Twenty-six hybrids were rated 2.50 or less. Most of the hybrids could not be differentiated statistically. Only Mo5 x H55 and the

Table 1. — Comparative mean virus ratings¹ of susceptible and tolerant single crosses for virus infection for 15 years at House Springs and 13 years at Portageville, Mo.

Location and single cross	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	Mean
House Springs (Jefferson County)																
Mo5 x H55 (susceptible)	8.00	8.20	7.30	7.60	7.00	7.00	8.20	7.60	6.80	6.83	5.08	7.46	5.79	2.93	6.06	6.78
Mo14W x Oh7B (tolerant)	1.67	5.81	4.00	4.70	2.33	1.03	3.60	1.70	4.00	2.66	3.17	3.57	3.29	2.10	1.46	2.94
Portageville (Pemiscot County)																
Mo5 x H55 (susceptible)	4.67	6.33	5.33	7.00	3.67	7.00	3.70	4.50	8.40	6.65	6.16	6.22	--- ² ----	---	3.00	5.59
Mo14W x Oh7B (tolerant)	1.35	1.00	1.70	1.00	1.00	2.30	1.70	1.20	5.50	1.14	2.37	2.95	----	----	2.83	2.00

¹Rated on a scale from 1 (no symptoms) to 9 (dead plants).

²No data available for 1980 and 1981 from Portageville.

sweet-corn check rated worse than the average of all entries; none rated better.

Table 2. — 1982 virus ratings for 27 commercial and 2 check hybrids grown at House Springs, Jefferson County; Portageville, Pemiscot County, Mo.; and the combined virus ratings for the 2 locations

Entry name	House Springs	Portageville	Combined
OeKalb XL72BB	1.45 ¹	2.02	1.73
Northrup King PX95 ³	1.55	2.02	1.78
McCurdy 81-34		2.23	1.79
Pioneer Brand 3187	1.44	2.14	1.79
Funks G-4740	1.58	2.14	1.86
McCurdy 7978 ³	1.51	2.24	1.87
Asgrow 96021W	1.32	2.50	1.91
OeKalb XL72B	1.46	2.43	1.94
Pioneer Brand 3147	2.02	1.96	1.99
Asgrow 96002	1.63	2.43	2.03
McCurdy 81-35	1.51	2.57	2.05
Northrup King PX79	1.57	2.54	2.05
O's Gold 5255	1.45	2.69	2.07
Pioneer Brand 3328	1.90	2.29	2.09
Pfizer Genetics Trojan EX117264	2.10	2.13	2.12
Mo14W x Oh7B ²	1.46	2.83	2.15
Asgrow RX962W ³	2.10	2.48	2.29
Northrup King X4952 ³	1.98	2.60	2.29
O's Gold 3344 ³	1.92	2.64	2.29
OeKalb 28038	1.85	2.76	2.31
McCurdy 8225	1.38	3.34	2.36
Funks G-4525A ³	2.24	2.79	2.52
Pfizer Genetics Trojan TX119A ³	2.33	2.88	2.61
Asgrow RX114	1.46	3.86	2.66
Funks 29092	2.50	2.85	2.68
OeKalb 28012	1.45	4.02	2.74
Northrup King PX9609	3.53	2.96	3.25
Pfizer Genetics Trojan EX117695	3.74	3.80	3.77
Mo5 x H55 ²	6.06	3.08	4.57
Sweet corn	4.24	6.60	5.42
Mean rating	2.07	2.80	2.43
Least significant dif., P = 0.05	1.83	1.44	1.42
Coefficient of variation %	54.20	31.50	41.40

¹Rated on a scale from 1 (no symptoms) to 9 (dead plants).

²Check hybrids.

³Missing plot values calculated from replications with data.

Combined data from these two locations, compared with those of former years, demonstrated that commercial corn breeders are developing hybrids with increased virus tolerance.

NCR-2 Uniform Inbred Evaluation

Forty-three inbred lines were rated August 4, 1982, at House Springs (table 3). The lowest rating was 2.41 (Oh1606) and the highest was 8.02 (ND79-14). Those rating the lowest were Oh1606, Mo81B:1245, H108, DE824, and Oh1646. Oh1606 was significantly more tolerant than 38 of the other inbreds. Compared to the responses of the commercial hybrids, the inbreds were not very tolerant to the viruses.

Table 3. — Virus ratings for 43 North Central Region inbred lines grown at House Springs, Mo., planted May 20, rated August 4, 1982

Entry name	Virus rating ¹
Oh1606	2.41
Mo81B:1245	3.40
H108	4.28
DE824	4.30
Oh1646	4.56
Pa77-48	5.08
Mo81B:1638	5.09
Ms81-1	5.09
Pa77-66	5.29

Table 3.—continued.

Entry name	Virus rating ¹
ND80-14	5.33
DE813	5.35
Oh1693	5.35
W153R	5.49
DE811	5.54
H107	5.60
ND79-9	5.77
ND79-12	5.86
Pa-7622	6.05
W117	6.05
Oh8710	6.06
MS81-2	6.12
Pa77-70	6.12
Oh43	6.13
MS81-4	6.15
A78-11	6.20
Pa7630	6.35
ND80-2	6.43
A78-3	6.50
Pa77-63	6.55
A78-8	6.60
Mo81B:1059	6.69
MS81-3	6.72
Mo81B:1689	6.73
W64A	6.79
Mo17	6.81
ND80-3	7.00
Oh8712	7.13
Pa7620	7.14
B73	7.19
Oh7B	7.50
Pa77-50	7.70
Oh91653	7.97
ND79-14	8.02
Mean rating	6.01
Mean rating in 1981	6.13
Least significant dif., $P = 0.05$	2.23
Coefficient of variation %	18.05

¹Rated on a scale from 1 (no symptoms) to 9 (dead plants).

PR-Mo2 and BS13 Population Selections

Twenty-one selections from the composite PR-Mo2 population from 1 to 5 years for virus tolerance survived and were rated on August 19, 1982 (table 4).

No significant differences were obtained between

the PR-Mo2 entries, the PR-Mo2 x MoSQA, or the PR-Mo2 X MoSQB entries. The entries having the highest virus tolerance ratings were [PR-Mo2(H-S)C5] (H20-V)C0 (1.90) and PR-Mo2(H22-V)C2 (1.98).

Table 4. — 1982 evaluation of progress for virus selection, House Springs, Mo.

Populations and cycle of selection	Virus rating ¹
PR-Mo2	
PR-Mo2(M17-V)C1 ²	2.78
PR-Mo2(M17-V)C2	2.68
PR-Mo2(M17-V)C3	2.52
PR-Mo2(H17-V)C4	2.62
PR-Mo2(H17-V)C5	2.56
Response to selection (gain per cycle) 0.05 NS	
(PR-Mo2 x MoSQA)	
(PR-Mo2 x MoSQA) (H18-V)C1 ²	2.17
(PR-Mo2 x MoSQA) (H18-V)C2	2.47
(PR-Mo2 x MoSQA) (H18-V)C3	2.64
(PR-Mo2 x MoSQA) (H18-V)C4	2.46
(PR-Mo2 x MoSQA) (H18-V)C5	2.21
Response to selection (gain per cycle) 0.00 NS	
(PR-Mo2 x MoSQB)	
(PR-Mo2 x MoSQB) (H19-V)C1	2.62
(PR-Mo2 x MoSQB) (H19-V)C2	2.83
(PR-Mo2 x MoSQB) (H19-V)C3	2.89
(PR-Mo2 x MoSQB) (H19-V)C4	2.69
(PR-Mo2 x MoSQB) (H19-V)C5	2.75
Response to selection (gain per cycle) 0.09 NS	
Miscellaneous	
[PR-Mo2(H-S)C2] (H21-V)C2	2.71
[PR-Mo2(H-S)C5] (H20-V)C0	1.90
PR-Mo2(H22-V)C2	1.98
PR-Mo2(H23-V)C0	2.22
[PR-Mo2 x MoSQB] (H-S)C2] (H24-V)C0	2.77
[PR-Mo2 x MoSQB] (H-S)C2] (H25-V)C0	2.49
Mean rating	2.50
Least significant dif., $P = 0.05$	1.03
Coefficient of variation %	31.07

¹Rated on a scale from 1 (no symptoms) to 9 (dead plants).

²M represents mass selection from isolated field. H represents half-sib selection. V represents virus selection. C represents different cycles. S represents selection for Stewart's wilt resistance. Planted 5-20-82, rated 8-19-82.

At Portageville, eight selections of BS13 were planted May 3 and rated August 10, 1982. No significant differences were noted between selections but all rated tolerant (2.3-2.7); the top 2 to 3 leaves were mottled, but no stunting occurred. These selections of BS13 were also grown and rated August 19, 1982, at House Springs. Slightly more tolerance (1.4 to 2.3) was noted. No significant differences were noted between selections. These selections had been identified and selected for tolerance to these two viruses over several years.

**[(*Zea diploperennis* x Popcorn) x Mo17] x Mo17
Backcrosses**

Thirty-six diploid perennial teosinte x Mo 17 backcrosses were planted May 20 ear-to-row at House Springs and rated August 14, 1982. Though 2 entries did not emerge, 34 grew to be rated. None rated very tolerant (3.2 to 8.1), indicating considerable variation among the progenies.

The same material was planted at Portageville, May 3, and rated August 10, 1982. At this location, they rated more tolerant (1.2 to 4.2) with 10 rating between 1.2 to 1.9. These selections were retained in the breeding program.

The higher disease ratings of the Mo17 backcrosses at House Springs vs. Portageville may be attributed to environmental conditions.

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Virus Tolerance Ratings of Corn Strains Grown in Ohio in 1982¹ [1-3]

Commercial 100 William R. Findley, John K. Knoke, and Raymond Louie²

✓ [Inbred lines and hybrids] grown in the Ohio river valley near Portsmouth on the James Daulton farm were rated for virus disease incidence resulting from natural infections.

Inbred line tests were sponsored by The Ohio State University, Ohio Agricultural Research and Development Center (OSU-OARDC), the North Central Corn Breeding Research Committee (NCCBRC), and the Interregional Corn Conference (IRCC). A hybrid test was conducted cooperatively with OSU-OARDC and the Ohio Cooperative Extension Service.

We mechanically planted seeds of the inbred lines and hand planted seeds of the hybrids in replicated plots on May 17 and 18, 1982. Plots of the inbreds and hybrids were 16.5 ft. (5m) and 18 ft (5.5m) long, respectively. The rows were 3 ft (91 cm) apart and separated by 4-ft (122 cm) aisles between tiers of plots. Twenty-five seeds of each inbred were planted in one-row plots. Seeds of the hybrids were planted in two-row plots, 60 seeds per row. Each row was later thinned to 36 plants. Inbreds were grown in two replications, hybrids in four replications.

Stands of most inbred entries were satisfactory, however, the data for some entries were omitted due to lack of plants. All hybrid entries had adequate stands. Weather conditions throughout the season generally favored good plant growth. Temperatures and soil moisture conditions were favorable for good seedling emergence although soil crusting was observed in certain spots within the field. Rainfall during June was considerably above average, and temperatures were several degrees below seasonal averages. Favorable

weather conditions prevailed during July. Most of August was dry. During the 5-week period beginning in late July, only 0.6 in. of rain fell in three light showers.

Virus Disease Incidence

Average disease incidence in 1980, 1981, and 1982 seasons in 28 inbred lines was 7, 25, and 33 percent for MDM; 19, 29, and 51 percent for MCD, respectively. Virus disease ratings were 3.8, 4.3, and 4.9 for the three seasons, respectively. In 23 hybrids common to the 1980, 1981, and 1982 seasons, MDM incidence averaged 2, 7, and 4 percent; MCD incidence averaged 3, 3, and 17 percent; and virus disease ratings averaged 1.9, 2.4, and 3.0, respectively.

Virus Disease Ratings

We rated plants for symptoms of MDM and MCD and for reaction to virus infection. Symptoms for MDM and MCD on individual plants were rated on July 30, except those in the 900 to 1,000 and 1,100 to 1,200 maturity group IRCC tests, which were rated on August 18. Symptoms of MDM were chlorotic patterns of mosaic, rings, flecks, streaks, or mottle. The diagnostic symptom of MCD was chlorotic streaking in the smallest leaf veins.

Host reaction of inbred lines to virus infection was rated on July 22, except those lines in the NCCBRC test and IRCC tests of 900 to 1,000 and 1,100 to 1,200 maturity, which were rated on August 12. We rated each entry on a plot basis. Plants rated 1 were symptomless while plants rated 2 were faintly chlorotic and those rated 3 were distinctly chlorotic. The virus rating scale included degrees of stunting, but stunting was not associated with ratings of 3 or less. Ratings of 4 to 9 indicated increasing degrees of stunting, chlorosis, and reduced ear size.

Any combination of mean comparisons are possible with Duncan's New Multiple Range Test (DNMRT). Entries that do not have the same letter in common

¹Cooperative investigations of the U.S. Department of Agriculture, Agricultural Research Service, The Ohio State University, Ohio Agricultural Research and Development Center, Wooster, Ohio 44691, and the Ohio Cooperative Extension Service, Columbus, Ohio 43210.

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differ at the 5 percent probability level. We computed least significance difference (LSD) at the 5 percent probability level and also coefficient of variation (CV) values. The LSD is useful in comparing means with a common standard or adjacent means. A conservative use of LSD involves comparisons with the mean of the experiment, useful when a large number of entries are included. The CV indicates test uniformity: the lower the CV, the greater the degree of test uniformity.

Inbred Evaluation

Percentages of plants with MDM, MCD, and mean plot virus disease ratings of the 49 inbred lines in the OSU-OARDC test are shown in tables 5, 6, and 7, respectively. Experimental variation resulted in, according to DNMR, statistically equal resistant reactions of inbreds ranging from 9 through 28.1 percent MDM, 2.0 through 41.9 percent MCD, and 1.5 through 3.5 virus disease rating.

Thirty-five experimental and 7 check inbred lines were included in the NCCBRC test. Percentages of MDMV-, MCDV-infected plants, and mean plot virus disease ratings are reported in tables 8, 9, and 10, respectively. The inbreds were equally resistant for MDM, MCD, and virus disease rating through the ranges 0 to 29.7 percent, 13.3 to 52.5 percent, and 3.5 to 5.5, respectively, at the 5 percent level of probability according to DNMR.

Interregional tests included inbred lines in maturity groups 100 to 300 shown in tables 11 through 13, 400 to 600 in tables 14 through 16, 700 to 800 in tables 17 through 19, 900 to 1,000 in tables 20 through 22, and 1,100 to 1,200 in tables 23 through 25. Statistically significant mean differences at the 5 percent probability level were found for MDMV-, MCDV-infected plants, and virus disease ratings for 34, 40, 32, and 23 inbred lines in the maturity groups 100 to 300, 400 to 600, 700 to 800, and 900 to 1,000, respectively. The 11 inbred lines included in the 1,100 to 1,200 maturity group were not significantly different for the three traits. Ranges in equally resistant reactions in the respective maturity groups were 0 through 21.7 percent, 0 through 40.2 percent, 0 through 28.6 percent, and 0 through 44.4 percent MDMV-infected plants; 17.9 through 64.1 percent, 26.2 through 66.7 percent, 27.3 through 61.6 percent, and 0 through 62.2 percent MCDV-infected plants; and 4.0 through 5.5, 4.0 through 6.0, 4.0 through 6.0, and only 1.0 for virus disease ratings. Inbred line FR802W in maturity group 900 to 1,000 had no MDMV- or MCDV-infected plants and rated 1.0 for virus disease severity. In 1981, this inbred had 0 and 6.7 percent MDMV- and MCDV-infected plants, respectively (SEE ARR—NC—10, January 1983, p. 11).

Hybrid Evaluation

Results of the hybrid tests are reported in tables 26, 27, and 28 for percentages of MDMV-, MCDV-infected plants, and mean plots virus disease ratings, respectively. We included 53 proprietary and 7 open-pedigree combinations. Statistically, 55, 43 and 16 hybrids were equally good in percentage of MDMV-, MCDV-infected plants, and virus disease ratings, respectively.

Conclusions

Inoculation pressure of MDMV and MCDV were too low to insure uniformity of virus incidence throughout the test area. Therefore, some corn strains that appear promising for resistance under the conditions of this test likely would not appear as promising under different conditions. For example, inbred lines N6J had 3.1 and 19.4 and C.I.38B had 52.5 and 4.5 percent MDMV-infected plants in 1981 and 1982, respectively; while inbred lines GT3 had 28.9 and 2.2 and Oh07 had 3.6 and 46.7 percent MCDV-infected plants, respectively. Under conditions of natural infection, incidence of MDMV and MCDV rarely are sufficient to insure high inoculation pressures and avoidance of "escapes," plants that are susceptible but appear resistant.

No corn strain is immune to virus infection under all conditions. Resistance is conditioned by such factors as age of the plant when infected, viral titer or concentration, strain(s) of the virus present, number of inoculations, if inoculation occurs in a critical cell site, as well as environmental factors such as temperature and humidity.

[(*Zea diploperennis* x Popcorn) X B73] x B73

At House Springs, 36 diploid perennial teosinte backcrosses were planted ear-to-row and rated August 14, 1982. The entries were rated from 1.47 to 6.62. Fourteen entries were very tolerant, rating 2.27 or less.

At Portageville, these same entries had higher ratings for virus infection than at House Springs, ranging from 2.4 to 8.0. Higher infection ratings were likely the result of dry weather that prevailed at Portageville late in the season. Such stress conditions did not occur at House Springs. Ten selections that rated the lowest were retained in the breeding program.

Conclusions

Virus symptoms and the infection levels were more severe in general in 1982. At the two locations, however, most commercial hybrids showed slightly more tolerance than in 1981. The magnitude of the virus ratings was about the same in 1982 as the year before. Portageville had a higher virus incidence this year in contrast to the two previous years.

No progress from the cyclic selection of the PR-Mo2 genotypes was made; however, two selections had good virus tolerance, [PR-Mo2(H-S) C5](H20-V)CO (1.90) and PR-Mo2(H-22-V)C2 (1.98).

The eight selections of B13 all rated tolerant to the two viruses at House Springs and Portageville. No significant differences were noted between entries.

For the first time, the backcrosses [*Zea diploperennis* x Popcorn) x Mo17] x Mo 17 and [*Zea diploperennis* x Popcorn) x B73] x B73 were evaluated at two locations. Ten entries from each backcross that rated the lowest in virus injury were retained in the breeding program.

A potential virus threat exists wherever johnsongrass grows; therefor, corn growers should select hybrids with the highest levels of virus tolerance. Many of the commercial hybrids tested in 1982 had tolerance levels that should be considered adequate for planting in virus problem areas.

Table 5. — Incidence of maize dwarf mosaic (MDM) in inbred lines in The Ohio State University, Ohio Agricultural Research and Development Center test, July 30, 1982, Portsmouth, Ohio

Inbred	MDM-Percent	
Oh509	0	a ¹
Oh91634 ² x(maize ² xZea dip.)	0	a
Oh1673	0	a
CI.44	0	a
Ky61-2335	0	a
Oh5145	0	a
Oh80:1631	0	a
Oh91678	0	a
Mo20W	0	a
GT3	0	a
Pa405	0	a
Oh513	0	a
Oh514	0	a
ND376	2.2	a
B68	2.6	a
Oh7B	2.8	a
N7B	2.9	a
CI.38B	4.5	a
GA209	5.6	a
Oh570	5.9	a
T240	7.1	ab
Oh572	7.9	a-c
GA203	9.1	a-c
Ky66-2500	10.3	a-c
Oh1EP	11.1	a-c
Pa884P	12.5	a-c
(Pa405 ² xZea dip.)-S3-1	13.9	a-c
T232	15.2	a-c
Oh91634	16.2	a-c
Oh07	16.5	a-c
B54	16.7	a-c
Tx601	17.9	a-c
B14A	19.0	a-c
N6J	19.4	a-c
CG1	28.1	a-d
Oh509A	37.4	b-d
H95	38.2	b-d
H111	39.3	c-e
H110	52.1	d-f
Mo17	53.0	d-g
B37	67.5	e-h
Pa32	73.2	f-h
C103	78.2	f-h
Oh517	79.5	f-h
H101	82.4	gh
Va35	84.2	h
M14	89.8	h
Oh43	91.7	h
Mo5	95.0	h
Coefficient of variation	52.4%	
Least significant difference	26.1	
Mean percent	24.7	

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 6. — Incidence of maize chlorotic dwarf (MCD) in inbred lines in The Ohio State University, Ohio Agricultural Research and Development Center test, July 30, 1982, Portsmouth, Ohio

Inbred	MCD-Percent	
Oh91634 ² x(maize ² xZea <u>dip.</u>)	2.0	a ¹
GT3	2.2	a
Oh80:1631	5.6	ab
CI.44	7.9	a-c
Oh517	13.2	a-c
Oh91634	16.8	a-d
Oh570	17.6	a-d
Oh7B	20.2	a-e
GA209	21.7	a-e
N6J	22.1	a-e
T240	22.6	a-e
Ky66-2500	23.7	a-e
Oh91678	24.7	a-f
(Pa405 ² xZea <u>dip.</u>)-S3-1	25.8	a-f
Tx601	29.1	a-g
Oh1EP	30.6	a-g
Oh5145	30.8	a-g
T232	31.7	a-g
B68	33.3	a-g
Oh513	33.3	a-g
Oh1673	33.9	a-g
H110	36.3	a-g
Oh509	37.2	a-g
Mo20W	37.7	a-g
C103	39.0	a-h
B14A	41.1	a-h
Oh572	41.9	a-h
N7B	44.7	b-i
Ky61-2335	44.8	b-i
Oh514	45.8	b-i
CI.38B	46.0	b-i
Oh07	46.7	b-i
Pa884P	48.8	c-i
CG1	50.0	c-i
GA203	50.0	c-i
H95	55.8	d-j
H101	55.9	d-j
Oh509A	58.9	d-j
ND376	62.0	e-k
B54	66.7	f-k
H111	66.7	f-k
Pa405	66.9	f-k
Mo17	68.9	g-k
Oh43	80.4	h-k
B37	86.9	i-k
Pa32	92.5	jk
M14	93.1	jk
Mo5	97.5	k
Va35	100.0	k
Coefficient of variation	40.2%	
Least significant difference	35.0	
Mean percent	43.1	

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 7. — Virus disease ratings on inbred lines in The Ohio State University, Ohio Agricultural Research and Development Center test, July 22, 1982, Portsmouth, Ohio

Inbred	Virus disease rating ¹	
GT3	1.5	a ²
Oh91634 ² x(maize ² xZea <u>dip.</u>)	1.5	a
Mo20W	2.0	ab
CI.44	2.0	ab
Oh80:1631	2.5	a-c
Oh513	3.0	a-d
Ky61-2335	3.5	a-e
Oh91634	3.5	a-e
N7B	3.5	a-e
Oh570	4.0	b-f
T240	4.0	b-f
T232	4.0	b-f
H110	4.0	b-f
Oh91678	4.0	b-f
Tx601	4.0	b-f
Oh5145	4.0	b-f
Oh7B	4.0	b-f
GA209	4.0	b-f
B68	4.0	b-f
Oh1EP	4.0	b-f
Oh572	4.0	b-f
(Pa405 ² xZea <u>dip.</u>)-S3-1	4.5	c-g
Oh1673	4.5	c-g
Ky66-2500	4.5	c-g
B54	4.5	c-g
Pa884P	4.5	c-g
N6J	4.5	c-g
B14A	4.5	c-g
H101	4.5	c-g
CI.38B	4.5	c-g
Oh509	4.5	c-g
Oh514	4.5	c-g
Oh517	5.0	d-h
ND376	5.0	d-h
C103	5.0	d-h
Oh509A	5.0	d-h
GA203	5.0	d-h
CG1	5.5	e-i
Pa405	5.5	e-i
Oh43	5.5	e-i
Mo17	5.5	e-i
H95	5.5	e-i
H111	6.0	f-i
Oh07	6.0	f-i
B37	6.0	f-i
Pa32	6.5	g-j
Va35	7.0	h-j
M14	7.5	ij
Mo5	8.0	j
Coefficient of variation	19.0%	
Least significant difference	1.7	
Mean rating	4.5	

¹Virus disease rated on a 1 to 9 scale with 1 = no symptoms and 9 = severe symptoms.

²Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 8. — Incidence of maize dwarf mosaic (MDM) in inbred lines in the North Central Corn Breeding Research Committee uniform test, July 30, 1982, Portsmouth, Ohio

Inbred	MDM-Percent	
Oh7B	0	a ¹
Oh91653	0	a
Oh1606	0	a
H108	0	a
Oh8710	5.0	ab
Mo81B:1245	7.3	a-c
Pa77-70	8.3	a-c
H107	12.5	a-d
Mo81:1638	14.9	a-e
Oh1693	19.6	a-f
DE813	20.0	a-f
Pa77-66	25.0	a-g
Pa77-48	27.1	a-g
Mich.81-1	27.9	a-g
Oh8712	29.7	a-g
Mo81B:1059	41.7	b-h
Mo17	42.4	c-i
Mo81:1689	43.8	c-i
Mich.81-2	43.9	c-i
DE811	45.6	d-j
DE824	51.0	e-k
W64A	56.4	f-l
Pa76-20	57.1	g-l
ND80-14	57.5	g-l
B73	59.8	g-m
ND80-3	61.7	g-m
Oh43	67.4	h-m
ND79-12	69.5	h-m
Pa77-30	70.2	h-m
Mich.81-4	71.9	h-m
Pa77-63	73.9	h-m
W117	74.4	h-m
Pa77-50	75.0	h-m
ND79-9	79.0	h-m
W153R	79.2	h-m
ND80-2	80.1	i-m
A78-11	80.7	j-m
A78-8	83.3	k-m
Pa76-22	84.0	k-m
Mich.81-3	86.4	k-m
ND79-14	92.9	lm
A78-3	95.2	m
Coefficient of variation	31.9%	
Least significant difference	31.1	
Mean percent	48.1	

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 9. — Incidence of maize chlorotic dwarf (MCD) in inbred lines in the North Central Corn Breeding Research Committee uniform test, July 30, 1982, Portsmouth, Ohio

Inbred	MCD-Percent	
DE824	13.3	a ¹
Oh1606	22.9	ab
Pa76-30	24.9	a-c
Mo17	25.0	a-c
Oh8712	30.0	a-d
Pa77-66	31.3	a-d
Oh91653	32.2	a-d
H108	33.1	a-e
W64A	34.3	a-e
Oh1693	34.9	a-e
Oh7B	37.5	a-f
Mo81B:1245	41.7	a-g
Oh43	43.5	a-h
H107	46.8	a-i
B73	48.2	a-j
Mich.81-1	51.7	a-k
DE813	52.5	a-k
ND80-2	58.8	b-l
Mo81:1638	58.8	b-l
A78-8	59.9	b-l
Pa77-48	60.4	b-l
Pa76-20	61.0	b-l
DE811	64.0	b-l
Oh8710	65.0	b-l
Pa77-63	65.6	c-l
Mo81B:1059	66.7	c-l
W117	68.3	d-l
Mo81:1689	70.4	d-l
Mich.81-2	71.5	d-l
Pa76-22	71.6	d-l
Pa77-70	75.3	e-l
ND80-14	77.5	f-l
Pa77-50	80.6	g-l
ND80-3	83.3	g-l
ND79-9	84.6	h-l
Mich.81-3	84.6	h-l
A78-11	86.2	i-l
ND79-12	86.2	i-l
W153R	89.4	j-l
ND79-14	92.9	kl
Mich.81-4	93.2	kl
A78-3	97.1	l
Coefficient of variation	29.2%	
Least significant difference	34.8	
Mean	59.0	

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 10. — Virus disease ratings on inbred lines in the North Central Corn Breeding uniform test, August 16, 1982, Portsmouth, Ohio

Inbred	Virus disease rating ¹	
H108	3.5	a ²
Oh1606	4.0	ab
Oh91653	4.0	ab
Mo81B:1245	4.5	a-c
Mo17	4.5	a-c
Mich.81-2	5.0	a-d
Mich.81-1	5.0	a-d
Oh1693	5.0	a-d
Oh78	5.0	a-d
Pa76-30	5.0	a-d
DE824	5.0	a-d
Mo81:1638	5.0	a-d
Mo81B:1059	5.0	a-d
DE813	5.0	a-d
Oh8712	5.5	a-e
Pa77-48	5.5	a-e
Pa77-70	5.5	a-e
Pa77-66	5.5	a-e
ND80-2	5.5	a-e
Oh8710	5.5	a-e
W64A	5.5	a-e
DE811	5.5	a-e
Oh 43	5.5	a-e
A78-3	6.0	b-f
Mo81:1689	6.0	b-f
Pa77-63	6.0	b-f
B73	6.0	b-f
ND79-12	6.0	b-f
A78-8	6.0	b-f
Mich.81-3	6.5	c-f
Pa76-20	6.5	c-f
A78-11	6.5	c-f
Mich.81-4	6.5	c-f
ND79-9	6.5	c-f
W153R	7.0	d-g
W117	7.0	d-g
Pa76-22	7.0	d-g
H107	7.0	d-g
Pa77-50	7.5	e-g
ND80-14	8.0	fg
ND79-14	8.0	fg
ND80-3	8.5	g
Coefficient of variation	14.1%	
Least significant difference	1.7	
Mean rating	5.8	

¹Virus disease rated on a 1 to 9 scale with 1 = no symptoms and 9 = severe symptoms.

²Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 11. — Incidence of maize dwarf mosaic (MDM) in inbred lines of 100 to 300 maturity in the Interregional Maize Inbred Evaluation test, July 30, 1982, Portsmouth, Ohio

Inbred	MDM-Percent	
ND376	0	a ¹
CG13	14.3	ab
Pa329	20.0	a-c
MS72	20.4	a-c
CL1	21.7	a-c
MS74	38.6	b-d
CG17	45.0	b-e
Pa326	47.2	b-f
CG14	51.0	b-g
CM105	57.8	c-h
CG15	58.2	c-h
CG18	58.3	c-h
CG11	61.5	d-i
A666	63.0	d-i
ND300	65.0	d-i
ND245	67.9	d-i
ND100	68.8	d-i
ND246	70.2	d-i
W117Ht	70.8	d-i
CK64	71.0	d-i
ND301	71.8	d-i
ND240	77.5	d-i
A671	78.5	e-i
ND241	78.8	e-i
C0109	81.6	e-i
A661	85.1	f-i
A665	85.1	f-i
CG12	87.0	f-i
ND474	87.5	g-i
CK52	90.2	g-i
ND408	93.8	hi
CK69	94.1	hi
CG16	96.7	hi
CK75	100.0	i
Coefficient of variation	25.4%	
Least significant difference	33.2	
Mean percent	64.1	

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 12. — Incidence of maize chlorotic dwarf (MCD) in inbred lines of 100 to 300 maturity in the Interregional Maize Inbred Evaluation test, July 30, 1982, Portsmouth, Ohio

Inbred	MCD-Percent
ND245	17.9 a ¹
ND376	36.4 ab
ND246	36.9 ab
C0109	38.9 a-c
CG13	40.5 a-c
CG17	42.3 a-d
MS72	54.6 a-e
ND301	59.0 a-e
A671	64.1 a-e
ND474	66.7 b-e
MS74	68.6 b-e
CG11	69.2 b-e
CG14	69.6 b-e
ND240	71.3 b-e
A665	74.1 b-e
CM105	75.0 b-e
ND100	75.0 b-e
Pa326	75.0 b-e
CK64	78.0 b-e
W117Ht	79.6 b-e
A661	80.4 b-e
CG16	83.3 b-e
CL1	84.4 b-e
ND300	87.5 c-e
ND241	89.3 de
CG15	89.7 de
CK69	90.4 de
ND408	90.6 de
CG12	92.9 e
CG18	93.8 e
CK52	96.9 e
A666	97.4 e
CK75	100.0 e
Pa329	100.0 e
Coefficient of variation	27.3%
Least significant difference	40.5
Mean percent	72.6

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 13. — Virus disease ratings on inbred lines of 100 to 300 maturity in the Interregional Maize Inbred Evaluation test, July 22, 1982, Portsmouth, Ohio

Inbred	Virus disease rating ¹
CG13	4.0 a ²
ND245	4.5 ab
ND376	4.5 ab
CG14	5.0 a-c
CM105	5.5 a-d
ND246	6.0 b-e
Pa329	6.0 b-e
MS72	6.0 b-e
A661	6.0 b-e
C0109	6.0 b-e
A665	6.5 c-f
ND301	6.5 c-f
A671	6.5 c-f
CK64	6.5 c-f
CG17	6.5 c-f
A666	6.5 c-f
Pa326	6.5 c-f
ND240	6.5 c-f
W117Ht	7.0 d-g
CK69	7.0 d-g
CL1	7.0 d-g
CG18	7.0 d-g
MS74	7.5 e-h
ND474	7.5 e-h
CG15	7.5 e-h
ND100	7.5 e-h
CG11	7.5 e-h
ND300	7.5 e-h
ND241	7.5 e-h
CG16	8.0 f-h
CK52	8.0 f-h
ND408	8.5 gh
CG12	9.0 h
CK75	9.0 h
Coefficient of variation	11.7%
Least significant difference	1.6
Mean rating	6.7

¹ Virus rated on a 1 to 9 scale, with 1= no symptoms and 9= severe symptoms.

² Duncan's New Multiple Range Test - Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 14. — Incidence of maize dwarf mosaic (MDM) in inbred lines of 400 to 600 maturity in the Interregional Maize Inbred Evaluation test, July 30, 1982, Portsmouth, Ohio

Inbred	MDM-Percent	
CH591-36	0	a ¹
Pa405	4.5	ab
A634	19.0	a-c
AY499	25.6	a-d
CH593-9	31.0	a-e
CH9	33.3	a-e
B85	36.5	a-e
CH581-13	40.2	a-f
H99	42.9	b-g
W570	44.4	b-h
A632	45.1	b-h
MS76	45.2	b-i
CH753-4	47.4	c-j
CH586-12	47.7	c-j
Mo42	50.0	c-j
W562	50.3	c-j
NYD410	53.1	c-k
H95	56.2	c-l
W548	56.3	c-l
NY821LERF	58.0	c-l
MS75	59.9	c-l
FR19	60.1	c-l
A635	63.3	d-l
B87	65.7	d-l
NY378	70.0	e-l
CH663-8	72.8	e-l
A619	79.2	f-l
W552C	79.9	f-l
W64A	81.3	f-l
A670	83.6	g-l
MS71	85.0	g-l
A659	86.2	h-l
AY562	87.5	i-l
MS200	87.6	i-l
CH671-28	88.8	j-l
NYRW20	92.9	k-l
CH592-46	92.9	k-l
NYRW3	93.2	k-l
CH606-11	96.9	l
NYRW23	97.6	l
Coefficient of variation	28.7%	
Least significant difference	35.0	
Mean percent	60.3	

¹ Duncan's New Multiple Range Test - Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 15. — Incidence of maize chlorotic dwarf (MCD) in inbred lines of 400 to 600 maturity in the Interregional Maize Inbred Evaluation test, July 30, 1982, Portsmouth, Ohio

Inbred	MCD-Percent
CH591-36	26.2 a ¹
B85	30.0 ab
B87	36.1 a-c
W64A	39.9 a-d
CH9	41.7 a-e
Pa405	48.5 a-f
A634	50.6 a-g
W552C	50.7 a-g
W570	52.8 a-h
CH671-28	53.8 a-i
H95	55.5 a-j
NY821LERF	55.7 a-j
CH593-9	55.9 a-j
Mo42	58.0 a-j
NY378	59.0 a-j
A619	61.4 a-j
AY499	63.8 a-j
W562	66.6 a-j
MS76	66.7 a-j
H99	69.4 b-j
A659	72.1 b-j
A632	73.8 c-j
NYD410	75.0 c-j
CH753-4	75.6 c-j
A635	76.7 c-j
CH586-12	78.3 c-j
CH581-13	78.6 d-j
NYRW20	78.9 d-j
W548	80.3 d-j
MS71	81.7 d-j
A670	83.6 e-j
CH592-46	85.7 f-j
CH606-11	86.2 f-j
MS75	90.6 f-j
NYRW3	90.9 g-j
CH663-8	91.2 g-j
AY562	92.3 g-j
FR19	93.2 h-j
MS200	95.5 i-j
NYRW23	97.6 j
Coefficient of variation	25.4%
Least significant difference	35.0
Mean percent	68.0

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 16. — Virus disease ratings on inbred lines of 400 to 600 maturity in the Interregional Maize Inbred Evaluation test, July 22, 1982, Portsmouth, Ohio

Inbred	Virus disease rating ¹
CH591-36	4.0 a ²
CH9	4.0 a
B85	4.5 ab
Pa405	4.5 ab
W64A	5.0 a-c
CH671-28	5.5 a-d
CH593-9	5.5 a-d
W570	5.5 a-d
W562	5.5 a-d
Mo42	5.5 a-d
W548	5.5 a-d
B87	5.5 a-d
H95	5.5 a-d
CH586-12	5.5 a-d
CH581-13	5.5 a-d
AY499	6.0 a-d
W552C	6.0 a-d
H99	6.0 a-d
NYD410	6.0 a-d
NY821LERF	6.0 a-d
MS75	6.0 a-d
A632	6.0 a-d
A634	6.0 a-d
CH753-4	6.5 b-d
MS200	6.5 b-d
MS76	6.5 b-d
A635	6.5 b-d
CH663-8	6.5 b-d
NY378	6.5 b-d
AY562	6.5 b-d
MS71	7.0 cd
A619	7.0 cd
A670	7.0 cd
FR19	7.0 cd
NYRW23	7.0 cd
A659	7.0 cd
CH606-11	7.5 d
CH592-46	7.5 d
NYRW20	7.5 d
NYRW3	7.5 d
Coefficient of variation	15.8%
Least significant difference	1.9
Mean rating	6.1

¹Virus disease rated on a 1 to 9 scale with 1 = no symptoms and 9 = severe symptoms.

²Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 17. — Incidence of maize dwarf mosaic (MDM) in inbred lines of 700 to 800 maturity in the Interregional Maize Inbred Evaluation test, July 30, 1982, Portsmouth, Ohio

Inbred	MDM-Percent
OH514	0 a ¹
Mo20W	0 a
N132	3.3 ab
B68	12.5 ab
N139	17.6 ab
Oh509A	28.6 a-c
H84	30.8 bc
Mo42	47.2 cd
B75	50.0 c-e
B76	50.3 c-e
N28Ht	52.1 c-e
Mo40	53.8 c-e
B84	58.1 c-f
Mo14W	63.4 d-g
B79	70.1 d-h
N152	71.8 d-h
FR20	77.4 d-h
Pa871	77.7 d-h
H93	77.8 d-h
B73	78.9 e-h
H100	79.2 e-h
FR16	80.4 e-h
B77	81.3 e-h
Mo17	81.3 e-h
H103	88.5 f-h
Pa91	89.4 f-h
Pa872	90.0 gh
H60	91.1 gh
FR21	96.9 h
H98	96.9 h
H102	97.2 h
Pa762	100.0 h
Coefficient of variation	20.9%
Least significant difference	26.6
Mean percent	62.3

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 18. — Incidence of maize chlorotic dwarf (MCD) in inbred lines of 700 to 800 maturity in the Interregional Maize Inbred Evaluation test, July 30, 1982, Portsmouth, Ohio

Inbred	MCD-Percent
Oh514	27.3 a ¹
B77	32.9 ab
Mo14W	36.3 a-c
N152	37.5 a-d
Mo20W	38.2 a-e
N139	38.2 a-e
Pa872	40.0 a-e
B68	44.6 a-f
B75	48.9 a-g
Mo40	49.1 a-g
Pa91	50.3 a-g
N132	50.8 a-g
Mo42	53.1 a-h
Oh509A	57.1 a-i
FR20	58.8 a-i
B76	61.6 a-i
B79	67.9 b-j
N28Ht	71.0 c-j
Pa871	73.6 d-j
H84	74.1 e-j
H98	76.8 f-j
Mo17	80.0 f-j
FR21	81.6 g-j
H100	81.7 g-j
H93	83.3 g-j
B84	83.5 g-j
H103	84.4 g-j
H102	87.1 h-j
B73	88.2 h-j
H60	90.0 i-j
FR16	100.0 j
Pa762	100.0 j
Coefficient of variation	23.2%
Least significant difference	30.4
Mean percent	64.0

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 19. — Virus disease ratings on inbred lines of 700 to 800 maturity in the Interregional Maize Inbred Evaluation test, July 22, 1982, Portsmouth, Ohio

Inbred	Virus disease rating ¹
Mo20W	4.0 a ²
B68	4.5 ab
N152	4.5 ab
Oh514	4.5 ab
Mo14W	5.0 a-c
N139	5.0 a-c
Mo42	5.5 a-d
B76	5.5 a-d
Oh509A	5.5 a-d
N132	5.5 a-d
Mo40	6.0 a-e
B84	6.0 a-e
B79	6.0 a-e
FR20	6.0 a-e
N28Ht	6.0 a-e
Pa91	6.5 b-e
B77	6.5 b-e
H100	6.5 b-e
B75	6.5 b-e
H93	6.5 b-e
H84	6.5 b-e
Pa872	7.0 c-e
H102	7.0 c-e
H98	7.0 c-e
H60	7.0 c-e
FR21	7.0 c-e
Pa871	7.0 c-e
H103	7.5 de
B73	7.5 de
FR16	8.0 e
Pa762	8.0 e
Mo17	8.0 e
Coefficient of variation	14.3%
Least significant difference	1.8
Mean rating	6.2

¹Virus disease rated on a 1 to 9 scale with 1 = no symptoms and 9 = severe symptoms.

²Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 20. — Incidence of maize dwarf mosaic (MDM) in inbred lines of 900 to 1,000 maturity in the Interregional Maize Inbred Evaluation test, August 18, 1982, Portsmouth, Ohio

Inbred	MDM-Percent	
FR802W	0	a ¹
T145	0	a
AR266	3.6	ab
T250	3.8	ab
CI.66	8.2	a-c
T151	9.2	a-c
AR258	9.7	a-c
GA209	10.0	a-c
T258	14.4	a-d
Tx61M	15.0	a-d
T159	16.5	a-d
T155	21.1	a-d
T256	29.2	a-d
Tx5855	34.3	a-d
T147	41.3	a-e
T254	43.3	a-e
FR805W	44.4	a-e
AR262	50.0	b-f
Mo17	54.3	c-g
Tx29A	61.4	d-g
Tx6252	88.3	e-g
T153	93.8	fg
Tx403	100.0	g
Coefficient of variation	63.6%	
Least significant difference	42.2	
Mean percent	32.0	

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 21. — Incidence of maize chlorotic dwarf (MCD) in inbred lines of 900 to 1,000 maturity in the Interregional Maize Inbred Evaluation test, August 18, 1982, Portsmouth, Ohio

Inbred	MCD-Percent	
FR802W	0	a ¹
T151	9.2	ab
T145	13.4	ab
AR258	25.0	a-c
T159	27.9	a-c
T250	30.2	a-d
AR266	33.3	a-d
T256	33.9	a-d
Mo17	45.7	a-e
Tx5855	46.4	a-e
GA209	47.3	a-e
Tx29A	47.7	a-e
T155	47.8	a-e
AR262	50.0	a-e
T254	56.2	a-e
T147	58.7	a-e
FR805W	62.2	a-e
T258	67.2	b-e
Tx6252	75.0	c-e
CI.66	78.5	c-e
Tx61M	85.0	de
T153	87.5	de
Tx403	96.4	e
Coefficient of variation	50.8%	
Least significant difference	50.4	
Mean percent	47.9	

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 22. — Virus disease ratings on inbred lines of 900 to 1,000 maturity in the Interregional Maize Inbred Evaluation test, August 16, 1982, Portsmouth, Ohio

Inbred	Virus disease rating ¹
FR802W	1.0 a ²
AR262	3.0 b
T145	3.0 b
T151	4.0 bc
GA209	4.5 cd
T250	5.0 c-e
Tx5855	5.0 c-e
T159	5.0 c-e
T155	5.0 c-e
Tx29A	5.0 c-e
AR266	5.0 c-e
AR258	5.0 c-e
T153	5.0 c-e
T256	5.0 c-e
T147	5.0 c-e
FR805W	5.5 d-f
CI.66	5.5 d-f
Tx61M	5.5 d-f
T258	5.5 d-f
T254	6.0 ef
Mo17	6.0 ef
Tx6252	6.5 f
Tx403	6.5 f
Coefficient of variation	10.0%
Least significant difference	1.0
Mean rating	4.9

¹Virus disease rated on a 1 to 9 scale with 1 = no symptoms and 9 = severe symptoms.

²Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 23. — Incidence of maize dwarf mosaic (MDM) in inbred lines of 1,100 to 1,200 maturity in the Interregional Maize Inbred Evaluation test, August 18, 1982, Portsmouth, Ohio

Inbred	MDM-Percent
T232	0
Mp496	0
Tx601	3.6
SC76	6.3
SC55	11.8
SC43	20.5
SC12	25.0
SC213	27.3
GT112Rf	50.0
NC246	55.8
NC248	63.3
Coefficient of variation	102.0%
Least significant difference	N.S.
Mean percent	24.0

Table 24. — Incidence of maize chlorotic dwarf (MCD) in inbred lines of 1,100 to 1,200 maturity in the Interregional Maize Inbred Evaluation test, August 18, 1982, Portsmouth, Ohio

Inbred	MCD-Percent
SC43	17.9
SC12	25.0
T232	28.1
SC55	35.9
Mp496	51.7
SC213	52.8
Tx601	64.3
GT112Rf	65.0
SC76	65.6
NC246	72.0
NC248	91.7
Coefficient of variation	49.9%
Least significant difference	N.S.
Mean percent	51.8

Table 25. — Virus disease ratings on inbred lines of 1,100 to 1,200 maturity in the Interregional Maize Inbred Evaluation test, August 16, 1982, Portsmouth, Ohio

Inbred	Virus disease rating ¹
T232	4.5
SC43	4.5
Mp496	4.5
SC213	5.0
SC76	5.5
NC246	5.5
SC12	5.5
SC55	5.5
GT112Rf	6.5
Tx601	6.5
NC248	7.5
Coefficient of variation	20.4%
Least significant difference	N.S.
Mean rating	5.5

¹Virus disease rated on a 1 to 9 scale with 1 = no symptoms and 9 = severe symptoms.

Table 26. — Incidence of maize dwarf mosaic (MDM) in commercial and open-pedigree hybrids, July 30, 1982, Portsmouth, Ohio

Hybrid	MDM-Percent
Landmark C787XX	0 a ¹
Oh570xOh91653	0 a
Madison MDM-1	0 a
Funk's G-4525A	0 a
Pioneer 3187	0 a
Mol7HtxT232	0 a
Northrup King PX95	0 a
Stewart SX77M	0 a
Zimmerman Z32Y	.3 a
Robinson Exp.5955	.3 a
Kenworthy KL-X82	.3 a
Landmark C888XX	.3 a
Southern States S.S.710	.3 a
Robinson Exp.5954	.3 a
Ferry-Morse Exp.4045	.3 a
Northrup King PX79	.4 a
Funk's G-4740	.4 a
Pioneer 3179	.7 ab
Acco 9532	.7 ab
Funk's Exp.8006X	.7 ab
Cargill 951	.7 ab
Southern States S.S.950W	.7 ab
O's Gold 5255	.7 ab
Va94xOh514	.8 ab

Hybrid	MDM-Percent
DeKalb XL72B	1.0 ab
DeKalb Exp.038	1.0 ab
Robinson 3922	1.1 ab
H95Htx(Oh7BxOh07)	1.1 ab
Migro HP809	1.1 ab
Trojan MDM116	1.4 ab
Pioneer 3328	1.4 ab
DeKalb Exp.012	1.4 ab
O's Gold 3344	1.4 ab
Robinson Exp.5956	1.4 ab
Zimmerman Z30Y	1.4 ab
Trojan Exp.81986	1.5 ab
(Oh514xOh509A)xH95Ht	1.5 ab
DeKalb EX8989	1.7 ab
Acco 9797	1.7 ab
P-A-G SX17A	1.7 ab
DeKalb XL61	1.8 ab
Columbiana H-2745	1.8 ab
Pioneer 3147	1.8 ab
Landmark C777XX	1.8 ab
Baldrige 335	2.0 ab
Funk's Exp.5003X	2.1 ab
Funk's Exp.29092	2.2 ab
Funk's Exp.7007X	2.7 ab
Funk's G-4779W	2.9 a-c
Kenworthy KL-X74	3.2 a-c
Ruff's R-445	3.3 a-c
DeKlab Exp.035	3.6 a-c
Acco 9792	4.3 a-c
Migro HP711	4.5 a-c
Taylor-Evans T-E6945	4.6 a-c
Columbiana H-2660W	7.9 cd
Zimmerman Z24Y	9.9 d
B37xOh545	30.4 e
Northrup King PX9609	30.9 e
WF9xOh51A	58.0 f
Coefficient of variation	122.5%
Least Significant difference	6.0
Mean percent	3.5

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 27. — Incidence of maize chlorotic dwarf (MCD) in commercial and open-pedigree hybrids, July 30, 1982, Portsmouth, Ohio

Hybrid	MCD-Percent	Hybrid	MCD-Percent
Madison MDM-1	4.0 a ¹	Funk's Exp.7007X	23.0 d-k
Stewart SX77M	5.4 a	Funk's Exp.8006X	24.3 e-k
Migro HP809	5.7 ab	Columbiana H-2745	25.2 e-k
Zimmerman Z30Y	5.8 ab	Zimmerman Z24Y	26.1 f-l
Funk's G-4525A	5.9 a-c	Northrup King PX95	27.7 g-m
Robinson 3922	7.2 a-d	Pioneer 3179	29.3 h-m
Oh570xOh91653	8.3 a-e	Funk's G-4779W	30.1 i-m
Mo17HtxT232	9.0 a-e	Funk's Exp.29092	34.2 j-n
DeKalb Exp.038	9.1 a-e	Southern States S.S.950W	38.4 k-n
Landmark C787XX	9.4 a-f	Migro HP711	41.3 l-n
Robinson Exp.5955	9.5 a-f	Trojan Exp.81986	42.8 mn
Robinson Exp.5954	9.8 a-f	Columbiana H-2660W	43.1 mn
H95Htx(Oh7BxOh07)	10.2 a-f	B37xOh545	46.8 no
DeKalb EX8989	10.7 a-f	WF9xOh51A	47.6 no
Landmark C888XX	10.7 a-f	Northrup King PX9609	59.2 o
DeKalb XL72B	11.2 a-g		
O's Gold 3344	12.0 a-g	Coefficient of variation	51.0%
Acco 9797	12.0 a-g	Least significant difference	13.7
DeKalb XL61	12.5 a-h	Mean percent	19.2
Southern States S.S.710	12.6 a-h		
Landmark C777XX	12.6 a-h		
Cargill 951	13.8 a-i		
DeKalb Exp.012	14.3 a-i		
Funk's Exp.5003X	14.3 a-i		
P-A-G SX17A	15.0 a-i		
Acco 9792	15.2 a-i		
Acco 9532	15.2 a-i		
Robinson Exp.5956	15.5 a-i		
Northrup King PX79	15.7 a-i		
Trojan MDM116	16.1 a-i		
(Oh514xOh509A)xH95Ht	16.2 a-i		
Kenworthy KL-X74	16.3 a-i		
Funk's G-4740	17.2 a-i		
Va94xOh514	17.3 a-j		
Pioneer 3328	17.8 a-j		
Ruff's R-445	17.9 a-i		
Zimmerman Z32Y	17.9 a-j		
DeKalb Exp.035	18.2 a-j		
Baldrige 335	18.5 a-j		
Kenworthy KL-X82	19.1 a-j		
Pioneer 3147	20.1 a-j		
O's Gold 5255	20.5 a-j		
Pioneer 3187	20.9 a-j		
Ferry Morse Exp.4045	22.6 b-k		
Taylor-Evans T-E6945	22.8 c-k		

¹Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

Table 28. — Virus disease ratings on commercial and open-pedigree hybrids, August 12, 1982, Portsmouth, Ohio

Hybrid	Virus disease rating ¹		Hybrid	Virus disease rating ¹	
Migro HP809	1.3	a ²	Funk's Exp.29092	3.5	e-i
Madison MDM-1	1.5	ab	Southern States S.S.950W	3.6	f-i
Robinson Exp.5955	2.0	a-c	Northrup King PX95	3.6	f-i
Stewart SX77M	2.0	a-c	Zimmerman Z32Y	3.6	f-i
Funk's G-4525A	2.1	a-d	Ferry-Morse Exp.4045	3.6	f-i
Zimmerman Z30Y	2.1	a-d	Columbiana H-2660W	3.8	g-i
H95Htx(Oh7BxOh07)	2.3	a-e	Columbiana H-2745	3.8	g-i
DeKalb Exp.038	2.4	a-f	Taylor-Evans T-E6945	3.9	hi
OH570xOh91653	2.4	a-f	Zimmerman Z24Y	3.9	hi
Robinson 3922	2.4	a-f	Migro HP711	3.9	hi
Mol7HtxT232	2.4	a-f	Trojan Exp.81986	4.5	ij
Landmark C777XX	2.5	a-g	WF9xOh51A	5.3	jk
Landmark C787XX	2.6	a-h	B37xOh545	5.5	jk
Pioneer 3147	2.6	a-h	Northrup King PX9609	5.8	k
Robinson Exp.5954	2.6	a-h			
Cargill 951	2.6	a-h	Coefficient of variation	25.3%	
Pioneer 3187	2.7	b-h	Least significant difference	1.1	
DeKalb EX8989	2.7	b-h	Mean rating	3.1	
Funk's Exp.5003X	2.8	b-h			
Northrup King PX79	2.8	b-h			
Va94xOh514	2.8	b-h			
Baldrige 335	2.8	b-h			
DeKalb XL61	2.9	c-h			
Landmark C888XX	2.9	c-h			
DeKalb XL72B	2.9	c-h			
(Oh514xOh509A)xH95Ht	2.9	c-h			
Southern States S.S.710	3.0	c-h			
Pioneer 3328	3.1	c-h			
P-A-G SX17A	3.1	c-h			
DeKalb Exp.012	3.1	c-h			
Acco 9797	3.2	c-i			
Funk's G-4740	3.2	c-i			
Acco 9792	3.2	c-i			
Kenworthy KL-X74	3.2	c-i			
Funk's Exp.8006X	3.3	c-i			
Pioneer 3179	3.3	c-i			
Funk's G-4779W	3.3	c-i			
Trojan MDM116	3.3	c-i			
DeKalb Exp.035	3.3	c-i			
O's Gold 3344	3.3	c-i			
Kenworthy KL-X82	3.4	d-i			
Funk's Exp.7007X	3.4	d-i			
O's Gold 5255	3.4	d-i			
Acco 9532	3.4	d-i			
Robinson Exp.5956	3.5	e-i			
Ruff's R-445	3.5	e-i			

¹Virus disease rated on a 1 to 9 scale with 1 = no symptoms and 9 = severe symptoms.

²Duncan's New Multiple Range Test—Entries with the same letter in common are not considered significantly different at the 5 percent level.

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